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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,962	03/16/2001	Atsuo Omaru	09792909-4809	7248
26263 7590 09/20/2010 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, WILLIS TOWER CHICAGO, IL 60606-1080				
EXAMINER				
DOVE, TRACY MAE				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
09/20/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

09/810,962

Applicant(s)

OMARU ET AL.

Examiner

TRACY DOVE

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Paper No(s)/Mail Date: _____

DETAILED ACTION

This Office Action is in response to the communication filed on 8/25/10.

Applicant's arguments have been considered, but are not persuasive. Claims 1, 3 and 4 are pending. Claims 2 and 5-46 are canceled.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/25/10 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the outermost surface" in line 7. There is insufficient antecedent basis for this limitation in the claim. It is unclear which claimed element's "outermost surface" is being limited. Furthermore, the relationship Gs does not appear to hold for the entire negative electrode, but for only the "outermost surface" of an element contained in the negative electrode. Appropriate correction is required.

Claim 3 recites "a negative electrode; and lyte, wherein," which is confusing and unclear. It appears this phrase should have been deleted from the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoon et al., US 6,482,547.

Yoon teaches a negative active material for a lithium secondary battery. The negative active material includes a crystalline carbon core and an amorphous carbon shell. The lithium secondary battery contains propylene carbonate for an organic solvent of an electrolyte (abstract). The battery includes a positive electrode, a negative electrode, a separator interposed between the positive and the negative electrodes, and an electrolyte (3:9-19). The separator may be a porous polymer film such as polyethylene or polypropylene (8:25-26). The negative active material has the crystalline graphite and the amorphous carbon having a turbostratic structure. The crystalline carbon has an intensity ratio $I(1360)/I(1580)$ of a Raman Spectroscopy of less than 0.3. The amorphous carbon has an intensity ratio $I(1360)/I(1580)$ of more than 0.2 (7:3-19). Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. US 6,027,833 in view of Morita et al. EP 0861804 A1.

Ueda teaches a nonaqueous electrolyte secondary cell comprising at least one pair of electrodes and a separator provided between the at least one paired electrodes. At least one electrode of the at least one paired electrodes has, at least on surfaces thereof, an active substance layer made of composite carbon particles, which individually comprise a core crystalline carbon and a low crystallinity or amorphous carbon layer formed on at least a part of the surfaces of the core (abstract). The active substance layer composed of the composite carbon particles and a carbon matrix preferably has a ratio of the intensity of a peak within a range of 1350 to 1370 cm^{-1} to the intensity of a peak within a range of 1580 to 1620 cm^{-1} of 0.4 or above, more preferably 0.7 or above (5:45-63).

Ueda does not explicitly teach the separator is a polypropylene microporous film. The examples of Ueda teach the separator is a porous polyethylene film. Morita teaches examples of known separators for nonaqueous electrolyte cells and teaches polyethylene and polypropylene are preferable from the viewpoint of stability and quality (8:4-11). Therefore, the invention as a whole would have been obvious to one having

ordinary skill in the art at the time the invention was made because Morita teaches polyethylene and polypropylene separators are preferably used in nonaqueous electrolyte cells because of stability and quality.

Response to Arguments

Applicant's arguments filed 8/4/10 have been fully considered but they are not persuasive. Applicant argues Yoon, Ueda and Morita all fail to disclose or fairly suggest a negative electrode having the claimed relationship $G_s = H_{sg}/H_{sd} \leq 10$ wherein G_s is the degree of graphitization of the outermost surface. Note "outermost surface" has been rejected as being indefinite.

Applicant argues Yoon does not teach or suggest a relationship between the intensity ratio of the crystalline graphite structure and the intensity ratio of the amorphous structure. However, it is unclear how this argument is relevant to the claimed invention and the prior art of record. The claimed invention requires a range for the degree of graphitization of "the outermost surface". There is no "relationship" between intensity ratios required by the claimed invention.

Applicant argues the peak intensity ratio of Ueda is not the same as the ratio required by the claims, which requires a ratio of the height of the crystalline structure, H_g , to the height of the amorphous structure, H_{sd} . However, the claims do not require such a limitation and this argument appears to be inconsistent with the claim language. Note "the outermost surface" has been rejected as indefinite. At least claim 1 recites " G_s being the degree of graphitization of the outermost surface" and "an amorphous coating on the surface of the base material". This indicates G_s is the degree of

graphitization of the amorphous coating since the amorphous coating is on the surface of the graphite crystalline base material.

Applicant states Yoon instead discloses a negative electrode where the intensity ratio of crystalline carbon is more than 0.2 and points to col. 7, lines 3-21. Applicant states Ueda discloses the ratio of intensities between a composite carbon particle and a carbon matrix being 0.4 or higher and points to col. 5, lines 46-63. Applicant states Morita discloses the ratio of two peak strengths of carbon being $1360\text{cm}^{-1}/1580\text{cm}^{-1}$ and points to page 9, lines 20-24.

Applicant argues the cited references cannot be fairly viewed as disclosing the degree of graphitization of a negative electrode because both references relate to the intensity of carbon and not the degree of graphitization. However, Applicant defines G_s as the ratio of the height (intensity) of two peaks on a Raman spectrum. The two "intensity" peaks are representative of the degree of graphitization as defined by Applicant in the presently claimed invention.

Applicant argues the prior art references disclose using a Raman spectrum analysis to determine the intensity of carbon in a sample opposed to the surface enhanced Raman spectrum presently claimed. However, a surface enhanced Raman spectroscopy provides the same information that traditional Raman spectroscopy does, simply with greatly enhanced signal (see attached Wikipedia entry under "Selection Rules" heading). Therefore, a traditional Raman spectrum and a surface enhanced Raman spectrum would provide the same data (intensity ratio) for a given sample (graphite material).

Applicant has not provided any persuasive evidence that the graphite materials of the prior art would have had different intensity ratio values depending on whether a surface enhanced Raman spectrum or a traditional Raman spectrum was obtained for the disclosed graphite materials. Furthermore, the references do not explicitly teach a traditional Raman spectrum is obtained. The intensity ratio values of the prior art graphite materials could have been obtained by surface enhanced Raman spectroscopy, however, the references are silent as to the specific Raman spectroscopy technique used in the prior art references. Examiner points out both the Raman spectrum of Ueda and the Raman spectrum of the present invention were obtained using an argon laser with a wavelength of 514.5 nm (Ueda 4:45-51 and [0027] of present invention).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday and Tuesday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TRACY DOVE/

Primary Examiner, Art Unit 1795

September 14, 2010